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Reactively, Proactively, Implicitly, Explicitly? Academics' Pedagogical Conceptions of how to Promote Research Ethics and Integrity

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Abstract

This article focuses on academics' conceptions of teaching research ethics and integrity. Seventeen academics from a Finnish research intensive university participated in this qualitative study. The data were collected using a qualitative multi-method approach, including think-aloud and interview data. The material was scrutinized using thematic analysis, with both deductive and inductive approaches. The results revealed variation in academics' views on the responsibility for teaching research integrity, the methods employed to teach it and the necessity of intervening when misconduct occurs. The academics emphasized the responsibility of the individual teacher and the student to foster integrity as well as the shared responsibility of all members of the academic community. However, many academics felt that they themselves needed pedagogical training. Most shared the view that practices of responsible conduct in research can be explicitly and intentionally taught through demonstration, explanation, and practice. However, the academics also noted that learning research integrity and ethics takes place implicitly. A few questioned the need for and the utility of training in the form of courses or through an explicitly addressed topic included in, for instance, methods courses. Their views on the question of how to deal with alleged cases of misconduct varied. While many academics considered a proactive approach the best way to prevent misconduct, some trusted more in a reactive approach. The results show that, while in general academics agree on the importance of research ethics, their conceptions of teaching it vary. The teaching conception bears consequences for the teaching methods chosen, assignment of responsibility for both teaching and students learning, and for the way in which teachers believe that misconduct should be responded to.

Keywords: research ethics, research integrity, ethics training, preventing misconduct, teaching conceptions

Introduction

Over the last decade, concerns have been voiced in academia over the state of research integrity and ethics (e.g., Martinson, Anderson and de Vries 2005; Ferguson et al. 2007; Poff 2010; Bertram Gallant and Goodchild 2011). Many variables come into play, not least, the integrity and ethical

competencies of the current generation of researchers, the availability of funding and positions (or lack of these), and the ever-increasing expectations of researchers to solve the problems of society. While the questions are complex, the education of future generations of researchers has been acknowledged as central and in need of attention. The research presented here focuses on the integrity and ethics competencies of future academics. The study endeavors to gain insight into academics' conception of teaching as they pertain to research integrity and ethics. The aim is to understand how research- and teaching-oriented academics consider research integrity and ethics to be best advanced among the younger generations of researchers.

Ethics can be defined as the principles and rules for distinguishing between acceptable and unacceptable behavior. In this study, we use Sarah Jordan's (2013) definition of research ethics:

> [S]tandards of moral behavior, expressed with reference to ethical theory…, intended to guide all individuals employed as professionals in or working as staff or students various capacities associated with the production or dissemination of systematic, generalizable knowledge. (p. 252)

The concepts of academic integrity and research integrity are closely related to each other and have been described as follows:

> Logically coherent positions on ideal moral behavior, backed by actions that demonstrate this position, practiced by individuals or institutions …. (Jordan 2013, 252)

Academic integrity involves honest and ethical everyday practices in any context in which academic faculty engage in inquiry (cf. Guillemin and Gillam 2004). Responsible research conduct ensures the propriety of the methods used and the trustworthiness of the results and conclusion (Anderson et al. 2007). In recent years, there has been an increasing amount of literature on research ethics and integrity. The focus has often been on misconduct, plagiarism, falsification, and fabrication (e.g., Martinson, Anderson and de Vries 2005; Anderson et al. 2007; Gullifer and Tyson 2010; Walker 2010; Löfström and Kupila 2013). Misbehavior refers to questionable, unethical, and dishonest research practices, such as changing the design, methodology, or results in response to pressure from a funding source, publishing the same data in several publications, and inappropriate review of papers or proposals. Misbehavior is generally regarded as a wider problem than falsification, fabrication, or plagiarism (Anderson et al. 2007; Martinson et al. 2005). However, all variations on misconduct or misbehavior are violations of the ethical norms and responsible conduct of research, and they damage research integrity. The reasons identified for committing misconduct and misbehavior vary from intentional to unintentional. Also contextual aspects of the research environment, such as competition and pressure to perform (e.g., Anderson and Louis 1994; Martinson et al. 2005; Löfström and Kupila 2013) have been identified, illustrating the interconnectedness of researchers and their environments in matters related to integrity. In contrast, some researchers have suggested that student misconduct is more likely a result of poor skills development rather than intentional misconduct (Breen and Maassen 2005).

In research on integrity and ethics, the findings related to the effectiveness of training are contradictory, depending on the quality and form of teaching (i.e., lectures, seminars, and mentoring). Ethics training and mentoring have been found to be powerful tools for promoting

responsible practice in research (Gray and Jordan 2012). However, mentoring can also increase behaviors that are problematic, especially among early career researchers if the mentor fails to model responsible scientific practices (Anderson et al. 2007). Indeed, researchers have argued that training should be offered to academics who teach and supervise future generations, not just to students and young researchers (Mumford et al. 2006). In addition, many academics seem to have different notions about their role in teaching research ethics and integrity (Löfström et al. 2015). While for some this may seem to be an issue of individual faculty members and their teaching, the diversity of views on teaching moral principles vis-à-vis research is reflected on a broader policy level as well. Various guidelines and codes of conduct, such as *The European Code of Conduct on Research Integrity*, which is a joint effort of the European Federation of Academies of Science and Humanities and the European Science Foundation (2011), provide guidance on integrity for researchers and research institutions in Europe, which is the broader context of this study. However, in their comparison of European codes of conduct, Simon Godecharle and colleagues (2013) conclude that there is diversity in the foci and concepts used, and consequently there is not consensus about the key contents of integrity training (cf. comparison of codes of conduct) (Godecharle et al. 2013). The guidelines are important, but they do not cover all the nuances of ethical issues in everyday research practices (Guillemin and Gillam 2004). Furthermore, it has been claimed that the existence of a policy and codes of conduct are not sufficient in itself to reduce the incidence of misconduct and to develop students' research skills and ethical understanding (Breen and Maassen 2005). It follows that there is a need to shift the focus toward pedagogical approaches to research ethics and integrity (McGowan 2009).

Thus, in order to understand how research ethics and integrity might best be promoted in academia and to identify obstacles to the effective teaching of these competencies, research on academics' conceptions of the pedagogies for promoting research ethics and integrity and their roles in this teaching is needed. Academics are in a key position to influence the competencies and attitudes of students and future scholars toward ethics and integrity in research (e.g., Alfredo and Hart 2011), but their perspectives on these matters have been less thoroughly researched than those of students (Beauvais et al. 2007). The present study aims to shed light on academics' conceptions of how best to promote research ethics and integrity, as well as their own role in this task. The findings will potentially help academics and administrators at academic institutions to understand better why students may or may not develop the desired research ethics and integrity competencies.

Pedagogical approaches to research ethics and integrity

Research ethics is an integral part of the competencies expected of university graduates. Students need knowledge and understanding of the standards of principled behavior in order to carry out the research tasks expected of them with the necessary moral and ethical rigor. Students need to establish a position of what is acceptable behavior and then act in accordance with that position in a way that is both ethically sustainable and can be regarded as acceptable in the academic community. Research suggests that students learn research ethics through *participating in ethics training* (e.g. Breen and Maassen 2005; Bernardi et al. 2011; Halkoaho et al. 2013; Trotman et al. 2013), *by observing faculty* (e.g. Löfström 2012; Nonis and Swift 2001), and *by participating in the university teaching-learning-research environment* (e.g. Löfström 2012; Rissanen and Löftsröm 2014).

The importance of integrating ethics into curricula has been highlighted. It has been suggested that ethics and research integrity need to be addressed in several courses across the curriculum, not only in a specialized course (Löfström 2015). However, with regard to whether research ethics courses

are an efficient means of instilling integrity, some studies suggest that compulsory research ethics training is useful (O'Leary and Cotter 2000). Others have shown that compulsory ethics courses may be less effective than voluntary courses; when students participate on a voluntary basis, they are more motivated to learn (Bernardi et al. 2011). Research has shown that students who have taken an ethics course are not more likely to respond to ethical dilemmas in a more ethical manner than students who have not taken such a course (Bernardi et al. 2011). While explicit teaching method is seen a way to ensure that all students are fully informed the principles of good scientific practices (Breen & Maassen 2005), the challenge is that formal ethics training sometimes fails to introduce tools for ethical decision-making (Fly et al. 1997). Simultaneously, the use of realistic ethical dilemmas or cases in research has been shown to promote student engagement among undergraduate students (e.g. Fisher and Kuther, 1997; Burr and King 2012; Zucchero 2008). Other pedagogical elements that facilitate learning processes related to research ethics and integrity in general include perspective-taking (Löfström 2012), feedback on solutions to dilemmas (Zucchero 2008; Burr and King 2012; Halkoaho et al., 2013), and feedback on the sustainability of one's ethical reasoning (Rissanen and Löfström 2015). These studies have been conducted primarily with undergraduate students, except for Halkoaho et al. (2013) where the participants were PhD students in medicine and nursing.

In addition to research ethics courses, students are exposed to integrity and ethics by observing the members of the academic community. Faculty members can encourage ethical behavior among students by modeling desired ethical behavior through their classroom presence (Nonis and Swift 2001). In order to develop their ethical thinking, students benefit from feedback from the academics with whom they interact (Branstetter and Handelsman 2000). Indeed, it has been claimed that substantial learning occurs in students' interactions with their supervisors, advisors, and other faculty (Anderson and Louis 1994; Aluede et al. 2006; Alfredo and Hart 2011; Gray and Jordan 2012: Rissanen and Löfström 2014). Modeling desired behaviors and exhibiting values that recognize integrity as an important cornerstone of all academic endeavors have been regarded as important means of teaching, although these may not be explicit in the sense of a course or module on research ethics.

However, not all academics are good role models. Research has shown that, while academics reject misconduct, not all of them uphold the highest standards of integrity in their own research (Anderson et al. 2007; Necker 2014; Martinson et al. 2005). Role modeling becomes a particularly relevant strategy with graduate and doctoral students, as it is mostly at these levels of study that students engage in research and may do so in faculty research projects. Sometimes, supervisors are unaware of the ethical nuances in their actions (Löfström and Pyhältö 2012) and of how students interpret their behaviors (Löfström and Pyhältö 2014; 2015). Moreover, the institution provides a contextual framework for teaching-learning environments, and the general approach adopted by institutions to matters of research ethics and integrity establishes the parameters within which teaching and learning activities take place (Bertram Gallant 2008). In a broad sense, often reflected in the integrity-related policies of institutions, approaches may take a reactive or a proactive form (e.g., Ferguson et al. 2007). In a proactive approach, the institution is actively geared to facilitating research ethics and integrity by raising awareness of good practice and offering training opportunities. In a reactive approach, the focus is on responding to misconduct, and intervention is limited to addressing situations in which problems have already occurred. In addition, a preventive approach focused on eliminating opportunities for misconduct can be identified, but it may not necessarily emphasize actively promoting good practices. Furthermore, the ways in which academia responds to misconduct is yet another element in the teaching-learning environment. Situations in

which students err can be viewed as demanding disciplining for inappropriate behavior or as opportunities for reflection, learning, and development (cf. Fly et al. 1997).

In sum, the literature suggests that there is merit in both explicit teaching and implicit modeling for engaging students in the process of learning research ethics and integrity. In addition, institutions may promote reactive approaches to misconduct and proactive approaches to integrity. Because academics are in a key position either to facilitate or neglect the advancement of integrity and ethics in research among students, how academics see their role in this task is not irrelevant. While previous studies on ethics training have concentrated especially on teaching interventions (i.e. applying a particular teaching method), research on teaching conceptions has been scarce. Research on higher education has demonstrated that teachers' conceptions of teaching are critical for teaching methods chosen and their approaches to teaching (e.g., Kember and Kwan 2000; Postareff et al. 2008). Simultaneously, it has been shown that conceptions of teaching need to be addressed at first in order to change teaching practices or methods (Postareff et al. 2008). Thus, we set out to investigate how academics see research ethics and integrity training and the extent to which their conceptions manifest preferences for explicit and implicit teaching. We also explored academics' views on how to intervene should misconduct occur and what is needed to develop training. We posed the following research questions: How do academics perceive research ethics and integrity as part of a set of university graduates' (BA and Master's) competencies, and what is the role of academics in teaching these competencies? What roles do academics assign themselves in the promotion of research ethics and integrity among university students?

Research method

Method and data collection

The research used a qualitative approach with interviews and think-aloud protocol as the data collection method. The study was conducted with seventeen academics from different disciplines in a large research-intensive university in Finland. The university is committed to the national guideline for common principles of research integrity and for handling alleged violations of conduct concerning all academic disciplines in Finland (Finnish Advisory Board on Research Integrity 2012). The aim of national guideline is to provide researchers with a model for the responsible conduct of research and to lay out a common procedure to guide universities in dealing with allegations. While the national guidelines concern everyone in the research institution, universities have institutional guidelines for handling student misconduct. As far as research ethics is concerned, certain academic disciplines in Finland, such as bioscience and medicine, have their own ethical norms and governing boards and committees. Additionally, institutions have, depending on their fields, ethics review boards for medicine, animal research and non-medical research involving human research participants.

Furthermore, according to the national guidelines of the Finnish Advisory Board on Research Integrity, every university should "ensure that the teaching of research integrity is integrated into their graduate and postgraduate programmes" and they also should ensure that "research integrity training is available for their staff" (Finnish Advisory Board on Research Integrity 2012, 31). Finnish universities enjoy extensive autonomy. It follows that every university is free to design the methods of teaching and the contents of their graduate and postgraduate programmes (Finnish Ministry of Education and Culture 2016).On the bachelor' s and master's levels the content and

extent of research ethics and integrity training varies among fields. Research ethics is compulsory for doctoral students.

The study was designed to capture academics' conceptions of research ethics and integrity training and their perceptions of their roles as well as the perceptions of their academic communities in promoting research ethics and integrity. Direct recruitment of potential participants was the chosen strategy in order to gain insights from individuals who might be expected to have a view of research ethics and integrity informed by extensive and recognized experience in research and/or teaching. The aim of recruiting process was to select a representative sub-sample of key informants (see Onwuegbuzie and Leech 2007). Potential participants were recruited among experienced scholars who had received awards in teaching or had received distinctive financing. Potentially the participants could have received both awards for their teaching competencies and highly esteemed research funding, but this was not the case. The teaching awards are highly valued institutional distinctions, and the research funding is highly competitive and acclaimed national funding. In order to protect the anonymity of the participants, we do not disclose the nature of the research funding or the type of teaching distinction. They were sent e-mails, which were followed up with phone calls after a first positive response. The participants (N = 17) represented life sciences (N = 4), natural science (N = 5), social sciences (N = 4), the arts and humanities (N = 4) (13 female and 4 male). Their teaching experience ranged from 10 to 35 years. Voluntary participation, informed consent, and anonymity of the participants were ensured in the research process. The research did not involve intervention in the physical integrity of the participants, deviation from informed consent, studying children under the age of 15 without parental consent, exposure to exceptionally strong stimuli, causing long-term mental harm beyond the risks of daily life, or risking participants' security (cf. Finnish Advisory Board on Research Integrity 2009, 3). Consequently, the study did not require an ethics review in the Finnish context.

The second-named author designed the study and collected the data using a multi-method approach (Johnson and Onwuegbuzie 2004), including in-person interviews and the think-aloud method (cf. Ericsson and Simon 1993; van Someren, Bernard and Sandberg 1994; Hofer 2004; Hyytinen et al. 2014). The fact that the interviewer was not personally familiar with the participants beforehand might have helped to reduce bias on the one hand. On the other hand, the lack of familiarity with the interviewer may have made some participants cautious in their comments. The interviewer made an effort to establish rapport and this was likely facilitated by the interviewer's researcher status. The data were collected in 2013 in a study applying Q-methodology to how university teachers understand the processes whereby undergraduate, masters, and honors students learn academic integrity as they undergo research supervision. In the Finnish context, the participants primarily had undergraduate and masters level research supervision in mind (the concept of honors studies does not apply in the Finnish context). The design of the research tool and the interview protocol have been reported elsewhere (Trotman et al. 2013; Löfström et al. 2015). This article reports on the Finnish think-aloud sub-sample and the interviews conducted in connection with the participants' ranking of statements in the Q-set, i.e. the set of questions broad enough to highlight a range of perspectives and possible views on research integrity (cf. Stenner, Watts, and Worrell 2008) as follows: each participant was asked to rank 42 statements in the Q-set (the instrument has been published in Löfström et al. 2015), based on the extent to which he or she agreed or disagreed with each statement. The following are examples of the type of statements in the Q-set: "Ethical behaviour can't be taught; students either have moral principles or they do not, there is little I can do", "I take a gradual approach and provide gentle feedback for the first mistake", "We need to promote academic integrity rather than react to misconduct", and "I do not teach academic integrity explicitly, but I do model it". The factor analysis procedure in the Q-method produced five configurations of views with distinctive characteristics, which were named as follows:1) Teachers

of rules and values, 2) Gatekeepers of the academy, 3) Teaching-oriented social reformers, 4) Academic integrity modelers who emphasize student responsibility, and 5) Academic integrity skill builders.

The statements were printed on cards to be sorted into a grid based on the extent one agreed or disagreed with the statement. In the course of the ranking, participants verbalized their thoughts (i.e., "think aloud"). They analyzed, interpreted, and evaluated aloud the meaning of statements such as "we can teach the practices of academic integrity, but we cannot teach values" in relation to their own experiences of research integrity and ethics, thereby allowing researchers access to their process of knowledge construction (cf. Hofer 2004; Hyytinen et al. 2014). Following the ranking, the academics were provided an opportunity to describe how they interpreted the statements and explain what aspects or experiences might have contributed to their views, allowing for added reflection in the thinking process. The prompts were as follows: 1) Please describe your response/reaction to the Q-set exercise; 2) Describe your interpretation of the cards placed in the columns of the grid with respect to particular cards that you found most troublesome or to which you had a strong reaction. Participants were prompted to think aloud as they arranged the cards on the grid in order for the researchers to capture their thinking and knowledge-construction processes.

Immediately after ranking the statements and answering the prompts, the participants were interviewed. The interview questions were: 1) What, in your opinion, is the best way to handle cases of academic dishonesty? 2) In what respect does your department address academic integrity? 3) Do you think that your institution addresses academic integrity adequately? 4) What changes related to academic integrity would you most like to see? 5) Briefly describe the nature of any incidences of academic dishonesty that you may have encountered. In addition to the interview questions, the queried background information included discipline/ subject area and years of university teaching experience. Participants were also asked which level or type of research supervision they had in mind while ranking the Q-statements (e.g., one-to-one, small-group instruction, lecture, etc.). Data collection sessions lasted from 45 to 90 minutes and were digitally recorded and transcribed verbatim. The use of a multi-method approach allowed the participants to reflect on their own experiences, as well as on their role and responsibility in teaching research integrity and ethics.

Data analysis

The data were analyzed using qualitative thematic analysis (Braun and Clarke 2006; Hyytinen et al. 2014). The aim of thematic analysis is to identify themes which capture a holistic picture of a particular phenomenon. The analytical process involved both deductive and inductive approaches and included four main phases. The analysis process was nonlinear, moving back and forward between phases. The analyses was conducted in collaboration with the authors. In order to confirm the reliability of the findings an investigator triangulation (Denzin, 2012) was utilized.

In the first phase, the transcribed dataset was read through several times and all expressions related to research integrity and research ethics training identified for further study. Thereafter, coding features were negotiated jointly by the authors. The second phase was data coding. The first-named author coded 70 percent of the transcribed dataset, and 30 per cent was coded by a trained research assistant. The trustworthiness of the coding was checked by the second-named author, who carefully follow-up on the whole coding process. After that the authors reconcile through discussion differences in coding. The coding focused on the following entities, which were coded systematically throughout the dataset: (a) *forms and methods of teaching,* (b) *how to prevent*

misconduct, (c) *how to deal with misconduct*, (d) *how to develop research ethics training* (Table 1). In order to examine the forms of teaching, we utilized the findings from the research, emphasizing explicit forms of teaching (directly teaching research ethics, e.g., in appropriate courses; cf. Burr and King 2012; O'Leary and Cotter 2000; Zucchero 2008) or implicit forms of teaching (e.g., learning through observation and socialization; cf. Alfredo and Hart 2011; Gray and Jordan 2012; Rissanen and Löfström 2014) as means of instilling research integrity, ethics competencies, and associated values among students.

Table 1. An example of codes

Data extract	**Code**
I do not believe in separate ethics courses. I believe that it [learning] is created when people have a chance to discuss their own work and its challenges in a confidential atmosphere. If and when misconduct occurs, all can trust that the alleged cases will be handled, and the people who brought up the case do not get in trouble. Confidence is a central matter here as is the need for the individual not to feel threatened. I would say that the problems should be dealt with through discussion; they need to be handled as a challenge for everyone, and then those ethical guidelines should be in the background as a safety net.	a) forms and methods of teaching c) how to intervene in misconduct

Thereafter, the codes and associated extracts were categorized by themes. Data categorization was continued until no new themes emerged from data (i.e. saturation was obtained) (Bowen 2008; Onwuegbuzie and Leech 2007). In the last phase, the themes were refined, labeled, and cross-checked in relation to the entire dataset, and the final descriptions and interpretations of the results were conducted. The final themes and sub-themes are described in Table 2. We identified inductively one theme according to (1) the responsibility of research ethics training. This was divided into three sub-themes, which were labeled as (1.1) the *responsibility of an individual teacher,* (1.2) the *shared responsibility of all members of the academic community,* and (1.3) the *responsibility of an individual student.* In addition, we distinguished deductively two sub-themes pertaining to (2) methods of teaching: *research integrity and ethics training as (2.1) implicit and (2.2) explicit teaching.* Furthermore, two sub-themes were identified according to (3) the methods of intervening if misconduct occurs: (3.1) *employing a reactive approach* and (3.2) *employing a proactive approach to prevent misconduct.* The themes describe how different conceptions of teaching research ethics and integrity manifested themselves in this particular group of academics.

Table 2. Themes and sub-themes of research integrity and ethics training

Themes	Sub-themes
1. The responsibility of research integrity and ethics training	1.1 The responsibility of the individual teacher 1.2 The shared responsibility of all members of the academic community 1.3 The responsibility of the individual student
2. Methods of teaching	2.1 Explicit teaching strategies 2.2 Implicit teaching strategies
3.Methods of intervening in the event of misconduct	3.1 A proactive approach to fostering integrity and turning misconduct into a learning opportunity 3.2 A reactive approach to misconduct, including punishment

Results

Academics' views of the responsibility for research integrity and ethics training varied, as did their ideas of how to teach these and how to prevent misconduct. While most of them emphasized that teaching research integrity and ethics is their job, this teaching was also described as the duty of each member of the academic community, not just the responsibility of the teachers. While most of the academics shared the view that the practices of responsible conduct in research can be explicitly and intentionally taught through demonstration, explanation, and practice, some were of the opinion that the objectives of research integrity and ethics cannot be explicitly taught or there is no need for the explicit educational interventions. A proactive approach and explicit teaching were mentioned more frequently by the academics in the arts and humanities, while a reactive approach without a

preference for educational interventions prevailed more often among those in the natural and life sciences. Implicit forms of teaching were proposed by academics regardless of disciplinary background.

Responsibility for research integrity and ethics training

Integrity, honesty, and respect were seen as starting points for responsible research. The academics reported that all members of the research community should always exhibit integrity and honesty in their scholarly discourses and daily research practices. In this study the onus of research integrity and ethics training was seen as threefold: the academics brought up the responsibility of the individual teacher, the responsibility of the individual student, and the shared responsibility of all members of the academic community (i.e. teachers, researchers, administrators, students and assistants). Although most of the academics (f=13) viewed it primarily as their job to address research integrity and ethics through their teaching, at the same time they emphasized that the whole research community should be involved in modeling and teaching research integrity. The responsibility for teaching research ethics cannot be viewed solely as the responsibility of individual teachers, but rather must be conceived as a shared responsibility in which everyone acknowledges their own role in facilitating these principles. Even a single counter-message could signal tolerance of misconduct:

> *Without the community, academic integrity does not develop. It cannot be left to the individual teacher's responsibility so that he or she alone takes care of it and supervises the students*.

Three academics also emphasized the students' role in learning the principles of research integrity: *"it is also their* [students'] *responsibility. It is not just on a supervisor*".

Most academics agreed that they have, or at least they should have, the knowledge to teach research integrity and ethics. However, nine felt that they themselves or their colleagues needed additional pedagogical training in how to teach the complexities of ethics: "*there are no explicit instructions, not even for teachers, as to what constitutes good practice. You are expected to know; you are expected to somehow learn this*". Also *gray ethics* (i.e., ambiguities where ethical guidelines are not sufficient, but where researchers need to exercise judgment based on their set of values; e.g., Kennedy, 2005) were mentioned as an area in which academics needed to develop their competencies. Academics also hoped to receive clearer instructions on how to handle incidences of suspected or alleged misconduct as well as more open discussion with colleagues. They said that they were left to ponder such questions alone:

> *Unfortunately, I have the feeling that nothing is actually done here; academics do not discuss* [these things] *among themselves unless someone is caught cheating; then they are grumbling about it. For example, the supervisors of master's theses never meet and discuss these matters. Of course, research integrity is an undercurrent here, but it doesn't, you know, come up to the surface.*

One academic mentioned that continuous critical discussion of integrity and research ethics is needed because values change as society changes and as scientific knowledge advances:

> *The discovery of oil was once a good thing, but, for example, from the point of view of the climate, it is a totally different story* [today]. *Notions of what is good keep changing.*

Seven academics maintained that the increased use of technology and the Internet had not increased occurrences of academic dishonesty. Rather, new technology provides tools for identifying plagiarism more easily. According to them, academic dishonesty among students is no more common than it was earlier.

Explicit and implicit strategies in teaching research integrity and ethics

Explicit teaching strategies

Academics frequently mentioned explicit aspects of research integrity and ethics training. Most academics (f=13) said that modeling research ethics is not enough; rather, research ethics and integrity must be explicitly emphasized in teaching. The academics did not expect their students to understand ethical expectations when they begin university study:

> *In my opinion, it is our task to teach students what is meant by doing things right in this context. To the students, you know, it isn't always clear how to quote and paraphrase. All such things can be surprisingly unclear. We* [academics] *easily suppose that everyone knows it, but, in my opinion, students must be walked through it. At least, if I think back on my own studies, it would have been much easier if somebody had really taught these things*.

The assumption that students do not enter higher education equipped with a sufficient understanding of research ethics and integrity has pedagogical implications. This assumption provides teachers with a clear imperative and helps them identify appropriate learning outcomes in this area. Once there is an awareness of the learning outcomes, teaching approaches can be modified to suit the learning needs of those students who may already have a more developed understanding of ethical questions.

Openness and transparency were seen as important for conveying to students the standards and ethically sustainable values expected of them. The *promotion of good research practices* as well as *fostering thinking skills* and *providing tools for recognizing and solving ethical issues* were regarded as the main aims of research integrity and ethics training. The academics agreed that the best learning results are obtained by teaching ethical understanding, and not just rules or guidelines, as the following extract demonstrates:

> *The students should be given the opportunity to practice it* [research ethics and integrity] *and get feedback. It is not enough that we only state the rules.*

The academics said that ethical aspects would remain disconnected brackets of thought if teaching focused only on the rules. Learning ethics was seen as taking place in the active engagement of students, for example, in group discussions and practices dealing with real ethical issues and dilemmas and in reading and discussing students' texts. In line with constructivist notions of teaching, the academics described the learning of research ethics as a process. They regarded the process as integrated into the learning of critical thinking, scientific writing, and conventions of

conducting research. Reflection was also seen as an essential part of the learning process. The learning activities they proposed, namely, engaging in discussions, working with practical dilemmas, and engaging with students' work, appear well aligned with the envisioned learning outcomes. In this sense, the academics exhibited a relatively high pedagogical awareness of research ethics and integrity.

While many academics emphasized the importance of research integrity and ethics training, they also considered this to be a complex area of teaching. Although research competencies are seen as an integral part of university studies, integrity and ethics are seldom acknowledged in curricula or course outlines. Therefore, academics felt that teaching research integrity and ethics depended too much on the views that individual teachers hold about the learning outcomes and methods of teaching, as the following extract shows:

> *Integrity is simply taken for granted. We do not have it on our agenda here. I think that it is each teacher's personal attitude to this question which determines how it is dealt with in teaching or whether it is acknowledged at all.*

While there is merit in the interviewed academics' pedagogical awareness, this is not sufficient to ensure that appropriate learning outcomes are met throughout the curriculum or that there is an alignment of the learning outcomes in different parts of the curriculum. Closely related to the question of learning outcomes is the assessment of learning. All academics who shared the view that research integrity and ethics should be explicitly emphasized in teaching mentioned that assessment and feedback have a crucial role in the learning process. However, at the same time, they expressed the view that they needed more training in assessing these aspects, especially in how to utilize formative assessment to facilitate and promote students' ethical understanding. Where there is no agreed-upon set of goals or objectives acknowledged in curricula, these academics wanted more discussion about assessment criteria and intended learning outcomes.

Implicit teaching strategies

Although all academics embraced the implicit teaching approach, all of them did not favor implicitly addressing ethics and integrity as a primary way to support the development of students' competences in these domains. All of the academics (f=13) who emphasized the explicit aspects of teaching research integrity and ethics also described the importance of implicit forms of teaching. They emphasized the need for all members of the academic community to model integrity. If what is taught in class in not in synchrony with how academics act, then students receive mixed messages about ethics and integrity. At worst, double standards are promoted.

The remaining academics (f=4) embraced the implicit teaching approach as a primary teaching method. These academics held the view that there is no need for explicit research integrity and ethics training. They expressed the idea that research misconduct is not such a widespread problem that teaching should actively and explicitly focus on it:

> *Discussion* [of research integrity] *does not feel relevant to me at the moment in this community because we don't have such a problem here. Thus, it would be really strange if we discussed this issue. You know, I don't think such a general discussion or teaching is necessary. Of course, all of us here share the common value that research misconduct is*

> *wrong, and as far as I can see, there is no need to discuss it, because it* [the common value] *is so generally accepted.*

While it is a positive characteristic of the teaching, learning, and research environment that its members have not encountered problems, this attitude could also make it difficult to intervene, should the need arise. It is important that there be space for discussion of research ethics and integrity as part of everyday practices. Newcomers to the scholarly community (e.g., doctoral students and students working in faculty projects) may not have the routines for fully identifying and analyzing all potential ethical dilemmas. We suspect that the values of the research community in these regards are also reflected in the teaching practices of those environments. Therefore, not just to prevent ethical problems, but also to promote high standards of research ethics and build a culture of integrity a more explicit approach is necessary.

The same four academics further stated that ethical behavior and understanding cannot be taught through course work. They emphasized that learning ethics involves learning morality and values, which are embedded in daily activities and interactions in the scholarly community. Supervisors and all other members of the research community were seen as role models for research integrity. These academics maintained that students develop ethical values by observing the behavior of academics.

> *I do not teach integrity. I do not teach it directly in my courses in the way that "today I'm talking about ethics." Either my modeling of ethics is visible in my own actions or it is not.*

While academics certainly are role models, students may not pick up the nuances of ethical issues or their teachers' reasoning on these issues if the ideas are not verbalized and taken up for explicit discussion. Therefore, in simply relying on the power of modeling behaviors, academics may fail to facilitate students' development of ethical sensitivity and thus fail to contribute to their developing a "toolkit" for handling ethical issues.

These four academics also shared the view that university students either have ethical understanding or they do not, depending on the individuals' characteristics and background. According to the academics, moral and ethical development does not occur throughout life, or at least, it is very difficult to alter after childhood. These academics reasoned that students interpret and apply ethical codes and guidelines in different ways in the light of their personal values and experiences. The challenge of this conception is that academics who hold such a view may not find it worthwhile to explain to their students why and how they arrive at solutions in ethical research dilemmas.

Furthermore, academics may find it difficult to conceptualize the pedagogy in teaching research ethics and integrity. One of these four academics who held the view that there is no need for research integrity and ethics training also expressed a lack of knowledge about how to teach these matters:

> *I find teaching ethics really difficult: what must be said about it and how it should be dealt with. It becomes a general discussion about ethicality and morality. I do not have the competence to teach it. They are such difficult issues. I just somehow understand myself what*

ethicality and morality mean. If I should have to teach it, I don't know how it should be taught. It [ethical understanding] *is such a built-in matter.*

Proactive and reactive approaches to integrity and misconduct

A proactive approach to fostering integrity and turning misconduct into a learning opportunity

The academics' views varied about how to prevent misconduct and how to intervene when problems arise. Those (f=13) who saw it as the task of the scholarly communities to develop teaching practices to avoid misconduct also proposed a proactive approach. These academics emphasized the importance of pre-empting opportunities for misconduct. The proactive approach, including instruction, training, supervision, feedback, and open discussion, was seen as the most effective way to build integrity and thereby prevent misconduct in the long run. These academics shared the view that punishments (i.e., failing the student or expulsion) cannot be the primary means of responding to misconduct. They believed that, rather than punishing students, more attention should be paid to education and teaching: ethically and morally responsible behavior is not motivated by fear of punishment. Dealing with breaches properly – and respectfully – would help students deepen their understanding of research integrity.

The academics expressed the belief that a prerequisite for learning ethics is a supportive learning environment where students feel safe and are willing to take risks in exploring the boundaries of their competencies rather than playing it safe and relying on existing knowledge and strategies. The academics further emphasized that it is important to provide multiple opportunities for students to deepen their ethical understanding and learn responsible behavior during their university studies. These academics proposed that ethics content should be incorporated into all teaching activities, not relegated only to separate research ethics courses, as illustrated in the following extract:

> *I do not believe in separate ethics courses. I believe that it* [learning] *is created when people have a chance to discuss their own work and its challenges in a confidential atmosphere. If and when misconduct occurs, all can trust that the alleged cases will be handled, and the people who brought up the case do not get into trouble. Confidence is a central matter here, as is the need for that the individual does not feel experience himself as threatened. I would say that the problems should be dealt with through discussion; they need to be handled as a challenge which belong to for everyone, and then those ethical guidelines should be in the background as a safety net.*

One academic expressed the view that teachers can provide instruction and assignments that activate and motivate students to do the right thing:

> *It is the teacher's task to make sure that the assignment prevents plagiarism, somehow in a positive way, by being constructive, giving clear instructions about how a good text is produced. The teacher can prevent misconduct beforehand. Of course, by discussing openly before the task, but also by requiring a lot of personal writing and elaboration, the students will not able to copy the text from here and there. You need to bring the assessment criteria to it* [their assignments]. *You know, assignments should push students to think.*

The above quotation is an example of how a sound pedagogical approach with constructively aligned teaching can be harnessed to help students develop sustainable study strategies.

The academics reported that each instance of suspected or alleged misconduct needs to be carefully examined. However, the proper course of action would depend on the situation. If the misconduct was unintentional (i.e., problems with academic writing), the teachers should first discuss the situation with the student and give the person another chance to complete the task. The academics emphasized that a discussion of misconduct should be used as an educational opportunity. If a student repeatedly contravenes the principles of integrity or ethics or is suspected of having plagiarized in the final version of a thesis, the case must scrutinized through the appropriate protocol:

> *It depends on the situation as to whether to let it pass or to make it public. In my view, when researchers stumble, we need to be much more serious about it than when students err. We should know better, and if we do something, we do it knowingly and that's much more serious, and, in my view, the consequences must be public. But students do it unintentionally or because they do not know better. It is unnecessary to humiliate anyone nor does that help the student learn from the situation in any way.*

A reactive approach to misconduct including punishment

A situation in which an academic community does not regard it as relevant to prevent ethical problems in research reflects a reactive approach to misconduct. This approach was emphasized by the academics (f=4) who considered it more important to react to real problems and misconduct with punishment rather than trying to pre-empt them. A reason for their lack of understanding of preventive work might be that they did not consider dishonesty to be a common problem. They agreed that punishment should be severe enough to provide a deterrent effect and to discourage students from attempting dishonest actions in the future. The academics emphasized their role as gatekeepers and stated that no one should get through courses by means of dishonesty. Teachers and other members of the academic community should immediately respond to any signs of misconduct, and if problems occur, these need to be dealt with publicly and openly:

> *In my view, it is a risk if one gets through too easily. Students talk with each other, and if we treat one of them in a certain way, we must be prepared to treat them all in that way. In the name of common morality and democracy, all breaches* [of ethics] *must be punished, and it must be done so that students talk in the cafés about "What a horrible experience it was getting caught!"*

The academics who embraced a proactive approach also subscribed to a reactive approach. The difference, however, was that the academics with a proactive approach favored the idea of intervening primarily through training and supervision and only secondarily through punishment, whereas the academics who embraced a reactive approach did not express a preference for educational interventions. In addition, the academics with a proactive approach emphasized that the nature of the punishment must be based on all the contextual factors in the misconduct case. In contrast, their colleagues with a reactive approach did not express much faith in the ability of training and supervision to reduce misconduct. The best way, they maintained, is to impose punishment.

Conclusions

The results indicated that academics have various points of view about the extent to which research ethics and integrity should be taught. While the academics may have had different groups of

students and different subjects in their mind, the fact that the underlying conceptions of teaching varied bears implications for how academics approach the task of teaching, whether or not they see it as their responsibility, and whether or not they will approach misconduct primarily as something to be punished for or as a learning opportunity for the student, which can be facilitated through pedagogically appropriate interventions. Conceptions of teaching change slowly, but there is evidence that the pedagogical training organized for academics enhances the development of teaching (Postareff et al. 2008). For instance, academics begin to use more student-centered approaches to learning as their conceptions of teaching and learning develop.

To the degree that research ethics and integrity are not acknowledged in curricula and course outlines, these are likely to remain incidental topics in university courses. With a variety of conceptions about how best to teach integrity and research ethics, the decision of whether or not address these is likely to depend on the view that each academic holds about the effectiveness of teaching these subjects. Implicit teaching systems without clear expectations of what research ethics training should accomplish can leave some students without the necessary competencies in these areas (Anderson et al. 2007). In a similar vein, the idea that the whole research community is collectively responsible for teaching and reinforcing research integrity is, to some extent, problematic. There is the risk that no one actually takes on the responsibility. Research ethics as an integral part of study programs ensures that students are to a sufficient degree exposed to ethical content (Gynnild and Gotschalk 2008).

Similarly, the academics' views diverged on the issue of how to deal with alleged cases of misconduct. National and institutional guidelines are in place to ensure university procedures, but academics are likely to apply them in different ways depending on their perspective (cf. Löfström et al. 2015; Shephard et al. 2015), i.e., whether they adopt a primarily reactive or proactive approach to integrity. Based on the variation in views, we anticipate difficulty in establishing a uniform and jointly agreed-upon agenda for teaching research integrity and ethics. Academics' lack of consensus on research integrity (Löfström et al. 2015) is likely to make agreement on learning goals and outcomes difficult.

The academics also differed in their assumptions of student familiarity with ethical standards and notions of research integrity at the beginning of their university-level studies (cf. also Collins and Amodeo 2005). The results of the present research showed that these academics tended not to take for granted that students are familiar with basic notions of research ethics and integrity. Gullifer and Tyson (2010) claim that this must be the point of departure and that students' familiarity with the conventions of academic writing must not be automatically assumed. The assumptions about students' familiarity with integrity and various aspects of research ethics have bearings on how academics can be expected to teach these topics. If, for instance, they assume that students are taught about referencing and plagiarism in high school, then academics may not pay much attention to these subjects in teaching. However, if academics consider it necessary to teach basic ethical principles and discuss what is expected in terms of integrity and adherence to related standards, they may be more prone to take up these topics in their courses.

Furthermore, as our results showed, the academics agreed that the best learning results are obtained by teaching ethical understanding, not just parroting rules or guidelines. In this sense, the academics appeared to rely on broader underlying notions of ethics in research than on a rule-ethical approach. Although generally not elaborated upon in the interviews, underlying conceptions of ethics held by

academics may well have bearings on their teaching approach. This is a question that warrants attention in further research, namely, academics' conceptions of their role in fostering research ethics and integrity.

The academics in this study described themselves as role models of research integrity. Yet they also reported a need for pedagogical training, i.e., how to teach and assess research integrity and ethics. This is not surprising, given that the qualifications of academics to teach these subjects have generally received little attention (e.g., Beauvais et al. 2007). More research is needed on the training models that function best for academics. Based on this study, a tool for reflecting the identified conceptions of teaching research ethics and integrity might be developed. Such a tool could be used to identify similarities and variations in the conceptions among academics in different disciplines.

The aim of the present study was to seek expert views, albeit not necessarily experts on research ethics and integrity, but rather experts in the sense of academics who have been distinguished and awarded in teaching or research. The sample size was small. Thus, it is not representative of academic teachers in general. Interviews with randomly selected participants may have produced a different outcome. Nevertheless, the sample provides insight into the views of a specific group of academics, namely, those with a distinct research or teaching profile. Because these individuals embody in many ways what academia deems desirable characteristics and competencies, their views of research ethics and integrity are useful to know. This knowledge provides information for developing practices not only with regard to this distinct group of academics, but also in identifying more general challenges in establishing and nurturing integrity.

The results also have a bearing on the scholarly community. First, while implicit learning of research integrity and ethics can take place in daily encounters with academic faculty, and form an important aspect of students' socialization into the scholarly community, it is necessary for academics to understand the importance of sufficiently verbalizing what characterizes research integrity and ethics. This will help students to understand not only the "what," but also the "why" of ethics and integrity. Second, research integrity and ethics must be acknowledged in university curricula and course outlines to prevent these topics from becoming incidental in a random selection of courses. In order to assure sufficient coverage and alignment of integrity and research ethics-related content, study programs must be viewed as a whole. Third, academics need pedagogical training in how to teach research integrity and ethics. Rather than just focusing on the contents of ethical codes of conduct, it is important to discuss the contents in connection with appropriate teaching and assessment methods to help teachers transfer these ideas to their teaching in practice.

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